IN THE CLAIMS

Please amend claim 48 as follows:

62. ~~48.~~ A method for suppressing formation of at least one undesirable chemical reaction product in a thermal chemical reaction, comprising:

passing at least one reactant into at least one reaction chamber;

said reaction chamber comprising a porous catalyst that catalyzes the reaction of said at least one reactant;

transferring heat to or from said at least one reaction chamber from or into at least one heat exchanger;

obtaining at least one product from said reaction chamber;

at steady-state, transferring at least 0.6 W of heat per cc of total reactor volume, such that, at steady state, the catalyst is maintained within a temperature range that reduces the formation of at least one undesirable chemical reaction product; and

maintaining a contact time of the reactant at less than 0.01 seconds, thereby suppressing slow reactions and reducing the formation of at least one undesirable chemical reaction products;

wherein said porous catalyst comprises a metal support.

Please add new claims 49-71 as follows:

10. ~~49.~~ The process of claim 1 wherein the catalyst comprises a monolith having a thickness of about 1 to about 3 mm.

11. ~~50.~~ The process of claim 1 wherein the reaction chamber has a length less than or equal to 6 inches and a height less than or equal to 2 inches.

12. ~~51.~~ The process of claim ~~50~~ 11 which is conducted in parallel in multiple reaction chambers, wherein each of the reaction chambers has a height less than 2 cm.

13. ~~52.~~ The process of claim ~~1~~ 1 wherein the process produces less than about 0.5

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SLPM of hydrogen gas per cubic centimeter of reactor volume.

53. The process of claim 52 wherein the reaction chamber has a length less than or equal to 6 inches and a height less than or equal to 2 inches.

54. The process of claim 53 wherein the heat exchanger comprises a fluid selected from the group consisting of: a combustion stream, steam and oil.

55. The process of claim 54 wherein the at least one heat exchanger has a thickness of 250 μm to 3 mm.

56. The process of claim 53 wherein the pressure drop through the reaction chamber is less than 10 psig.

57. The process of claim 6 wherein the reaction chamber has a length less than or equal to 6 inches and a height less than or equal to 2 inches.

58. The process of claim 57 which is conducted in parallel in multiple reaction chambers, wherein each of the reaction chambers has a height less than 2 cm.

59. The process of claim 7 which is conducted in parallel in multiple reaction chambers, wherein each of the reaction chambers has a height less than 2 cm.

60. The process of claim 7 wherein the reaction chamber has a length less than or equal to 6 inches and a height less than or equal to 2 inches.

61. The process of claim 7 wherein the at least one heat exchanger has a dimension of 250 μm to 3 mm.

62. The apparatus of claim 10 wherein the at least one heat exchanger has a dimension of 250 μm to 3 mm.

63. The method of claim 11 wherein the reaction chamber has a height in the range of 1 mm to 5 mm.

64. The method of claim 51 wherein the at least reaction chamber and the at least one heat exchanger are separated by a web having a thickness of between 0.01 and 0.25 inches.

65. The method of claim 2 wherein the at least reaction chamber and the at least one heat exchanger are separated by a web having a thickness of between 0.01 and 0.25 inches.

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~~66~~. The process of claim ~~14~~ wherein the at least reaction chamber and the at least one heat exchanger are separated by a web having a thickness of between 0.01 and 0.25 inches.

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~~67~~. The process of claim ~~28~~ which is conducted in parallel in multiple reaction chambers, wherein each of the reaction chambers has a height less than 2 cm.

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~~68~~. The process of claim ~~67~~ wherein the catalyst occupies at least 80% of the cross-sectional area of the reaction chamber.

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~~69~~. The process of claim ~~67~~ wherein the at least one heat exchanger has a thickness of 250 μm to 3 mm.

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~~70~~. The method of claim ~~65~~ wherein the at least one heat exchanger has a thickness of 250 μm to 3 mm.

63 66
~~71~~. The method of claim ~~48~~ which is conducted in parallel in multiple reaction chambers, wherein each of the reaction chambers has a height less than 2 cm.